touchpad **26**, as compared to a typical CIRQUE(™) touch-pad. This situation makes the touchpad more difficult to implement because of the restricted size of the area in which it can operate.

[0070] **FIG. 7** is a figure showing a top view of the X electrode grid layer **66**. The X electrodes **74** are disposed as shown.

[0071] An important feature to notice is that not only are some of the Y electrodes **70** nonlinear, but the spacing between Y electrodes **70** and the X electrodes **74** is non-uniform. Just like the nonlinear Y electrodes, this fact compromises performance of the touchpad **26**. In order to compensate, it is necessary to use the same technique of using offsets. This is only possible because the location of the nonlinear portion of the electrodes and the spacing between all of the electrodes is known. Thus, the offsets would be different depending upon the specific electrode spacing and bending around apertures **28**. This feature of being able to provide these offsets in order to accurately determine finger location over the touchpad is a novel aspect of the present invention.

[0072] **FIG. 8** is provided to illustrate the look of the touchpad after all of the overlapping electrode layers **62, 66** are disposed on the touchpad substrate **60**. It should be understood that the scale of **FIGS. 6, 7** and **8** is not actual size. The electrode grid layers **62, 66** were expanded to make them easier to see. Not mentioned but part of the touchpad is the touchpad circuitry that is coupled to the electrode grid layers **62, 66**. The touchpad circuitry is designed to detect and localize any disturbance that interferes with the mutual capacitance between the electrode grid layers **62, 66**. This concept is explained in the parent applications and the previously cited CIRQUE(™) Corporation patents.

[0073] An important aspect of the invention is to bring touchpad functionality to the mobile telephone. This functionality includes the ability to perform scrolling, tapping, double-tapping, and cursor control. This functionality is all part of the touchpad **26**, and are new to the application of a mobile telephone.

[0074] **FIG. 9** is an illustration of a different physical configuration of a mobile telephone **78**. The mobile telephone **78** has a base portion **80**, and a cover portion **82**. The cover portion **82** will typically include a display screen, such as the LCD display screen **84** shown here. The base portion **80** will typically include the keypad **86**. Alternatively, a different type of display screen technology may be used. This may be an advantage if the touchpad **26** can be more easily disposed behind the display screen in an alternative embodiment. Other display screen technology includes plasma displays and electronic ink displays.

[0075] The purpose of providing this illustration is that it may be desirable to provide some touchpad functionality in more than one location in the mobile telephone. For example, the mobile telephone shown in **FIG. 9** and shown in **FIG. 10** with the cover portion **92** closed includes a small LCD display screen **88** on the back **90**. The display screen **88** can be used to indicate, for example, the identity of a caller or some other mobile telephone function. What is important to understand is that when using this type of mobile telephone **78**, it is often desirable not to have to open the mobile telephone to perform some touchpad functions on the display screen **88**.

[0076] Another example is using the display screen to provide access to a list of telephone numbers in a telephone directory stored in memory. A touchpad is a very convenient method of scrolling. However, mechanical scrolling wheels can be easily actuated at undesirable moments. Furthermore, reliability is an issue because the internal mechanical mechanism of a mechanical scrolling wheel is open to the elements. In contrast, it is much harder to actuate a touchpad that requires the use of a finger to move across it. In addition, the electronic circuitry of the touchpad is hidden inside the hard housing **14**.

[0077] Accordingly, it is another aspect of the present invention to provide a small touchpad separate from the touchpad **26** underneath the keymat **22** that has limited touchpad functionality. For example, a small touchpad **92** is shown disposed along a edge or side of the mobile telephone **78**. This touchpad **92** can provide scrolling functionality for the display screen **88**. The touchpad **92** can be disposed flush with the hard housing **14**, or it can be disposed beneath the hard housing. Some delineation on the hard housing **14** should then be provided to indicate the location of the touchpad **92**. The user would simply move a thumb or finger along the touchpad **92** to perform scrolling, the direction of movement causing scrolling up or down.

[0078] Regarding actuation of the touchpads **26** and **92**, there are many ways that this could be accomplished. For example, application actuation could be accompanied by actuation of the appropriate touchpad. Consider a mobile telephone web browser application being actuated by the receipt of an email message. Starting the web browser could occur simultaneously with actuation of the touchpad, enabling the user to manipulate a cursor in a graphical web browser environment. The user could then cause the email message to be displayed on the display screen **8**.

[0079] Touchpad actuation thus may be automatic, in response to actuation of a specific activity or program that relies on touchpad functionality to operate. In contrast, touchpad actuation may also be performed manually through a dedicated switch. The switch can be disposed near the keys **20** of the keypad **18**. These methods might also be combined, or customized by the user, wherein selected applications cause automatic actuation of the touchpad, and others do not without manual intervention.

[0080] It is observed that the touchpad **92** may be activated by certain activities being displayed on the display screen **88**. This would enable the user not to have to open the mobile telephone to actuate the touchpad **92**, and yet prevent accidental actuation that might otherwise be caused by carrying the mobile telephone in a bag or purse.

[0081] **FIG. 11** is provided as a very basic block diagram of the components of the present invention when disposed within a mobile telephone. These components include the display screen **8**, a memory module **100** for storing data, a processor **102** for controlling operation of the various components, transceiver circuits **104** for controlling transmission and reception of data, including voice data, a power source **106** for providing power for all operations of the mobile telephone, an interface **108** to the data from the mechanical switches **32** actuated by keys **20** on the keypad **18**, and an interface **110** to data from the touchpad **26**. It should be recognized that the mobile telephone may include more components, such as card readers or other memory devices. This figure should only be considered a typical example.